



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/073,981	02/14/2002	Ryoji Toyofuku	101154-00009	4937

7590 07/19/2004
ARENT FOX KINTNER PLOTKIN & KAHN, PLLC
Suite 600
1050 Connecticut Avenue, N.W.
Washington, DC 20036-5339

EXAMINER

LUM VANNUCCI, LEE SIN YEE

ART UNIT PAPER NUMBER

3611

DATE MAILED: 07/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/073,981

Applicant(s)

TOYOFUKU ET AL.

Examiner

Ms. Lee S. Lum

Art Unit

3611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 February 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 5-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 5 and 6 is/are rejected.
- 7) ☒ Claim(s) 7 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 14 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. This Action replaces that mailed 5/6/04, and is generated in response to a conversation with attorney R. Barton on 5/27/04. Ms. Barton indicated that the Action included rejections using Joshita, but that reference failed to disclose the respective limitations, specifically, "wherein the nut is disposed between the rack and electric motor", in which the rack is a portion of the rack-and-pinion mechanism that is adjacent the pinion gear. Upon a quick review, Examiner agreed, and has provided new rejections below.
2. An Amendment was filed 2/20/04 in which Claims 2-4 were also cancelled, and Claim 7 added.
3. The disclosure is objected to because in Claim 1, paragraph 8, line 2, "rigs" should be "ribs".
4. The following is a quotation of the second paragraph of 35 U.S.C. 112:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In the last three lines, "a bearing" and "the bearing" are unclear because the invention has two bearings 131/132, so it is unclear which "bearing" is being referred.

Art Unit: 3611

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

A. **Claim 1** is rejected under 35 U.S.C. 103(a) as being unpatentable over Joshita 5971094 in view of Hovanchak EPO 0 279 034 A1.

Joshita discloses an electric power steering apparatus for a vehicle comprising
Rack shaft with rack 4 of gear teeth at one end (unidentified in fig 2, inherent external teeth on rack 4, meshing with pinion 3a), and externally-threaded screw 61 at one portion,
Pinion 3a (fig 2) meshing with the rack,
Ball-screw mechanism 10 with balls 62 and nut 63 engaged with the screw 32,
Electric motor 8 with hollow shaft 8e extending around the rack shaft,
the shaft and nut being fitted together in the longitudinal direction of the rack shaft so as to form a connection that transmits torque between the shaft and nut (fig 5),
the connection including torque limiter 50 that comprises split ring 51 of resilient material with ribs 51c on its outer surface, the ribs engaging the inner peripheral surface of the nut (fig 5),
the shaft 8e having one end portion supported by bearing 8d, and
the opposite end supported within a connection hole (unidentified outer surface of nut that extends close to bearing 65 at one end, and other end adjacent torque limiter) of the nut via the torque limiter.

The reference does not disclose the as disposed between the rack and motor, while Hovanchak shows this configuration in figs 1 and 5, with nut assembly 182 between the rack 34 (of gear teeth 71) and motor 22. While Joshita's arrangement is functionally equivalent, it would have been obvious to one with ordinary skill in the art at the time the invention was made to include this alternate configuration, as shown in Hovanchak, to permit easier access to the motor, thus decrease time and effort in repair and maintenance of this portion of the assembly.

Art Unit: 3611

B. **Claim 5** is rejected under 35 U.S.C. 103(a) as being unpatentable over Joshita in view of Hovanchak, and in further view of Shimizu 4766970.

The previous references do not disclose a commutator and brush arrangement, while Shimizu shows, in fig 4, commutator 51 and brush 53, the latter being in sliding contact with the former (col 4, lines 19-20). While Joshita discloses a well-known, and functionally equivalent, configuration including rotor and magnet, it would have been obvious to one with ordinary skill in the art at the time the invention was made to include this alternate configuration, as shown in Shimizu, for different applications.

C. **Claim 6** is rejected under 35 U.S.C. 103(a) as being unpatentable over Joshita in view of Hovanchak, and in further view of Sugino et al 5927429.

The previous references do not disclose a rack guide, while Sugino shows rack guide 50. It would have been obvious to one with ordinary skill in the art at the time the invention was made to include a rack guide, as shown in Sugino, so that the rack shaft may be properly supported during movement, and to properly engage the pinion with the rack.

The previous references do not disclose a bush at the other end of the rack shaft, while Sugino shows bush 75 in Fig 6. It would have been obvious to one with ordinary skill in the art at the time the invention was made to include this element so that this portion of the rack shaft is properly supported for optimal performance.

6. **Claim 7** is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, and the 112 issue resolved. Prior art does not disclose an electric power steering apparatus comprising, *inter alia*, a two-part housing comprising a first housing with a rack and pinion mechanism, and that supports a ball nut via a bearing, and a second housing containing an electric motor with a hollow shaft supported only at one end portion via another bearing.

7. The prior art made of record, and not relied upon, is considered pertinent to the Applicant's disclosure: Namgung 6439339, Shimizu et al 5650701.

8. RESPONSE TO REMARKS

Examiner has provided new rejections as indicated above, and apologizes for any inconvenience. Applicant is asked to note allowable subject matter.

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


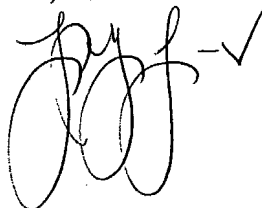
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Communication with the Examiner and USPTO

Any inquiry concerning this communication should be directed to Ms. Lum at (703) 305-0232, M-F, 9-6. If attempts to reach the examiner are unsuccessful, her supervisor, Ms. Lesley Morris is at 703 308-0629. Our fax number is 703 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for unpublished applications: private PAIR only, for published applications: private or public PAIR. For more information re PAIR: <http://pair-direct.uspto.gov>. Questions re private PAIR: contact the Electronic Business Center (EBC) at 866 217-9197.

Ms. Lee S. Lum, Examiner
7/7/04



LESLEY D. MORRIS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3600